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(54) COMPOSITE MATERIAL WITH HIGH THERMAL CONDUCTIVITY AND ITS PRODUCTION

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a high thermal conductivity composite material having high thermal conductivity, reduced in specific gravity, and excellent in heat resistance and its production.

SOLUTION: A powder mixture, having a composition consisting of, by weight, 20–70% copper and the balance silicon carbide powder of $\geq 1.0\text{wt.\%}$ oxygen content, is compacted and then sintered at $1080\text{--}1200^\circ\text{C}$ in a nonoxidizing atmosphere of 1×10^{-5} to 1×10^{-3} partial pressure of oxygen. By this method, the high thermal conductivity composite material, consisting of 20–70wt.% copper and the balance silicon carbide and having $\leq 10\text{ppm}/^\circ\text{C}$ thermal expansion coefficient in the temp. region between room temp. and 800°C and $\geq 80\text{W/m.K}$ thermal conductivity, can be obtained.

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